# Asthma Prevalence per state

#### 2025-10-28

## Question

Is there a correlation between the proportion of low air quality days and prevalence of asthma per state?

### Hypothesis

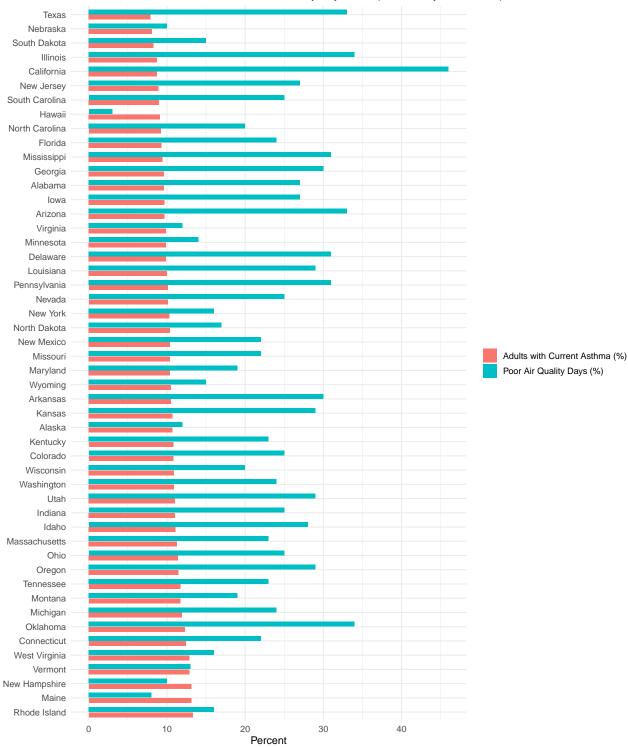
The state you live in does impact your chances of having asthma. The states with lower air quality will have higher rates of asthma.

#### Possible test to run

We could use the Glm test to test the probability that the correlation between air quality and asthma is significant, and use the linear regression model to test the strength of the correlation between asthma and air quality.

# Plot/Graph





#### Significance

- Pearson correlation (asthma % vs poor-air %): r = -0.279, p = 0.0497.
- Spearman correlation (rank-based):  $\mathbf{rho} = -0.258$ ,  $\mathbf{p} = 0.07$ .
- Linear model: asthma =  $11.560 + (-0.046 \times \text{poor-air\%})$ ; 95% CI for slope [-0.092, -0.000];  $\mathbb{R}^2 =$

#### 0.078.

**Interpretation:** There is a statistically significant but **weak** relationship; the sign is given by the slope above.

Table 1: Top 5 states by a dult asthma (%)

State	Adults with Asthma (%)
Rhode Island	13.3
Maine	13.1
New Hampshire	13.1
Vermont	12.9
West Virginia	12.9

Table 2: Bottom 5 states by adult asthma (%)

State	Adults with Asthma (%)
Texas	7.9
Nebraska	8.1
South Dakota	8.3
California	8.7
Illinois	8.7

Table 3: Top 5 states by poor-air days (%)

State	Poor-Air Days	(%)
California		46
Illinois		34
Oklahoma		34
Arizona		33
Texas		33

Table 4: Bottom 5 states by poor-air days (%)

State	Poor-Air Days (%)
Hawaii	3
Maine	8
Nebraska	10
New Hampshire	10
Alaska	12